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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Erdal Paksoy et al.  
Serial No: 09/920,479  
Filed: 8/1/2001  
Art Unit: 2654  
Examiner: V. Chawan  
Docket No.: TI-31551  
Conf. No.: 5575  
Customer No.: 23494

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FACSIMILE COVER SHEET

<input checked="" type="checkbox"/> FACSIMILE COVER SHEET (1 SHEET)		<input type="checkbox"/> AMENDMENT	
<input type="checkbox"/> NEW APPLICATION		<input type="checkbox"/> EOT	
<input type="checkbox"/> DECLARATION		<input type="checkbox"/> NOTICE OF APPEAL	
<input type="checkbox"/> ASSIGNMENT		<input checked="" type="checkbox"/> APPEAL (4 Pages)	
<input type="checkbox"/> FORMAL DRAWINGS		<input type="checkbox"/> ISSUE FEE	
<input type="checkbox"/> INFORMAL DRAWINGS		<input type="checkbox"/> REPLY BRIEF (IN TRIPLICATE)	
<input type="checkbox"/> CONTINUATION APP'N		<input type="checkbox"/>	
<input type="checkbox"/> DIVISIONAL APP'N		<input type="checkbox"/>	
NAME OF INVENTOR(S): Erdal Paksoy et al.		RECEIPT DATE & SERIAL NO.: Serial No.: 09/920,479	
TITLE OF INVENTION: Wideband Speech Coding and Method		Filing Date: 8/1/2001	
TI FILE NO.: TI-31551		Conf. No.: 5575	
DEPOSIT ACCT. NO.: 20-0668			
FAXED: 04/06/2005			
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Texas Instruments Incorporated  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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APR 06 2005

Appl.No.: 09/920,479  
Appellant: Paksoy et al  
Filed: August 1, 2001  
TC/AU: 2654  
Examiner: Patel

Confirmation No.: 5575

Docket: TI-31551  
Cust.No.: 23494

APPELLANTS' BRIEF

Commissioner for Patents  
P.O.Box 1450  
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 41.37 items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668. A fee transmittal sheet is enclosed.

Respectfully submitted,



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Rule 41.37(c)(1)(i) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

Claims 1-6 are pending in the application with claims 3-6 objected to and claims 1-2 finally rejected. This appeal involves the finally rejected claims.

Rule 41.37(c)(1)(iv) Status of amendments

There is no amendment after final rejection.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

The invention provides a method of digital speech decoding to give a wideband (0-8 kHz) speech signal by combining a lowband (0-4 kHz) decoded speech signal plus a highband (4-8 kHz) speech signal synthesized using an excitation made from noise modulated by a portion of the decoded lowband signal applied to a highband linear prediction synthesis filter. The lowband portion used for noise modulation is adaptively smoothed over time. Application Fig.1c shows the preferred embodiment using the 2.8 – 3.8 kHz portion of the lowband for noise modulation; application page 12, steps (8)-(9) describe the highband excitation and step (10) the highband synthesis. Explicitly, the first sentence of step (9) describes the excitation for the highband as the product of noise and the smoothed waveform  $sm[n](m)$  that derives eventually from  $lbdh(m)$ . And  $lbdh(m)$  is the lowband decimated high portion. Thus the excitation for the highband derives from the lowband, but the synthesis filter (linear prediction) for the highband is extracted from the original highband speech and encoded.

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

(1) whether claims 1-2 are patentable over the Tucker reference in view of the Akamine reference.

Rule 41.37(c)(1)(vii) Arguments

(1) Claims 1-2 were rejected as unpatentable over Tucker in view of Akamine. The Examiner pointed to Tucker for highband excitation (col. 3, In. 26-33 and col. 6, In. 36-46) and to Akamine for adaptive smoothing.

Appellants reply that Tucker Fig.2 and col. 6, In. 49-57 show white noise exciting a linear predictive filter (Spectral shaping 23) but show no modulated white noise excitation. Tucker col.3, In.26-33 and col. 6, In. 36-46 cited by the Examiner only describe noise as excitation; see col.3, In.31-33 and col.6, In. 40-41. In contrast, claims 1-2 require the highband excitation be "noise modulated by a portion" of the decoded lowband speech signal. Tucker has no suggestion of any type of modulation of noise to create an excitation for the highband linear prediction synthesis filter. Akamine only applies to single (low)band speech. Consequently, the claims are patentable over the references.

Rule 41.37(c)(1)(viii) Claims appendix

1. A method of wideband speech decoding, comprising:

- (a) decoding a first portion of an input signal as a lowband speech signal;
- (b) decoding a second portion of an input signal as a noise-modulated excitation of a linear prediction encoding wherein said noise modulated excitation is noise modulated by a portion of the results of said decoding as a lowband speech signal of preceding step (a) and adaptively smoothed; and
- (c) combining the results of foregoing steps (a) and (b) to form a decoded wideband speech signal.

2. A wideband speech decoder, comprising:

- (a) a first speech decoder with an input for encoded narrowband speech;
- (b) a second speech decoder with an input for encoded highband speech and an input for the output of said first speech decoder, said second speech decoder using excitation of noise modulated by a portion of the output of said first speech decoder and adaptively smoothed; and
- (c) a combiner for the outputs of said first and second speech decoders to output decoded wideband speech.

Rule 41.37(c)(1)(ix) Evidence appendix

none

Rule 41.37(c)(1)(x) Related proceedings appendix

none